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Unveiling ERP Systems Research: A Systematic Literature Review through the SPAR-4-SLR Lens

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Abstract: In a context marked by digital transformation, ERP (Enterprise Resource Planning) systems play a strategic role in performance as well as in the governance of the organization. However, literature remains fragmented and, sometimes, contradictory about the extent of their impact. To provide a more structured view, this study conducts a systematic literature review following the SPAR-4-SLR protocol, which ensures transparency and methodological rigor. The analysis of a corpus of 804 articles published from 2000 to 2025, supported by bibliometric and thematic techniques (co-citation, co-occurrence, VOSviewer), reveals the existence of six major clusters of research. Among these, the organizational performance, governance, and sustainability clusters stand out as the central themes. This review provides an integrative mapping of the field, recognizes the key contributions along with the remaining gaps, and outlines future directions better to comprehend the ERP-performance relationship in a changing environment.

Keywords: ERP (Enterprise Resource Planning), SPAR-4-SLR, bibliometric analysis, content analysis.

1. Introduction

In the ever-changing economic environment of today, organizations have made it their mission to improve their competitiveness, efficiency, and operational agility. Enterprise Resource Planning (ERP) systems, being integrated technological solutions, have become the major leaders of change in organizations. By reporting the data, standardizing the business flow, and offering managerial support, ERP systems elevate their role as key instruments to attain better results for the whole organization. Even so, the connection between the implementation of ERP and organizational performance is still debated, and empirical findings are often inconsistent.

The present research is a systematic review of literature that uses the SPAR-4-SLR framework to illustrate the stages of the review process: Design, Conduct, and Reporting. This research method ensures that the steps in the commission of the review are conducted firmly, visibly, and reproducibly, while still allowing for a thorough integration of the available studies. The function of the evaluation is to discover the theoretical background, the empirical tendencies, and the research gaps in the field of ERP solutions, highlighting their influence on the performance of the organization.

Following SPAR-4-SLR guidelines, this study focuses on three research questions:

- By using bibliometric and thematic content analyses, we find and outline the main thematic areas of ERP research from 2000 to 2025.
- To survey what scholars have written about the ERP-performance nexus, considering the performance aspects explored (operational, financial, strategic, etc.), the methods used, and the main results obtained.

The analysis utilizes sophisticated bibliometric visualization methods (such as VOSviewer) to discover the main theme clusters that are the most representative of the field. Such clusters include the one dealing with performance, governance, and value creation, which is the most relevant aspect to the research problem.
Firstly, the review through a comprehensive theoretical and empirical research background sets the stage for the inquiry into the ERP-performance linkage. By providing a critical and contemporary integration of previous works, it offers a clear insight into the strategic role of ERP systems in achieving organizational efficacy.

2. The objective of Systematic Literature Review through SPAR-4-SLR

As information technology has been going up in such a rapid way, organizations have generally been using Enterprise Resource Planning (ERP) systems to manage not only the internal processes but the overall performance as well. Essentially, ERP systems have been primarily 'resource planning' tools. Still, they have evolved into more integrated and strategic platforms to the extent that they can alter the organizational structures and enable them to respond to changing market needs and requirements.
Though the importance of ERP is steadily on the rise, the academic literature on ERP is still very diverse, with different industries, research questions, geographic contexts, and methodological approaches. This makes it challenging to gain a comprehensive understanding of what is known and understood. The majority of the studies are found to be limited to case analyses or focusing only on the technical aspects of an ERP implementation without necessarily giving broader insights as to their actual impact on organizational performance or the intellectual structure of the field.
Against this background, a systematic and comprehensive literature review, implemented under the SPAR-4-SLR protocol, aims at providing a more perceptible, analytical, and well-organized mapping of the ERP study. Two main objectives guide it:

Firstly, to quantify the bibliometric level of the field through the assessment of publication patterns, ranks of the most productive authors, mapping of the collaborative relationships, and the identification of the most influential journals.
Secondly, to reveal the intellectual framework of ERP studies by providing insight into the topics, key terms, prominent viewpoints, and the theoretical linkages between ERP systems and organizational performance that are most closely related to the field would be achieved.

This review utilizes the Scopus database as a source of publications from 2000 to 2025 and employs keywords such as ERP, performance, and enterprise resource planning. The research has implemented performance analysis along with scientific mapping techniques (co-citation, keyword co-occurrence, and thematic clustering) to study how the scholars have conceptualized the technology of ERP systems as the new value of organizations.

This review, in addition to delineating the current state of research, aims at detecting the gaps of present-day research, revealing the sources of trends, and defining future directions. The ambition of it being a tool of synthesis for academics and a strategic reference for practitioners is on both sides of the playing field, i.e., academics and practitioners.
Two research questions frame this inquiry:
RQ1: What are the bibliometric trends in ERP research with respect to organizational performance?
RQ2: What is the intellectual structure of this research domain, and which dimensions of performance are most frequently associated with ERP systems?
The outline of the scientific landscape about ERP is one way the review can delve into its strategic role in modern organizations by answering these questions.

3. Methodology: The SPAR-4-SLR protocol (Scientific Procedures and Rationales for Systematic Literature Reviews)

To ensure a thorough and transparent approach in our literature review, we implemented the SPAR-4-SLR protocol suggested by [1]. This methodological framework is specifically designed to provide a guide for systematic reviews of literature in management science and to ensure the structured, exhaustive, and reproducible synthesis of the existing knowledge.

In our research, this protocol was introduced to the ERP systems domain to study scientific literature on the relationship between ERP and organizational performance. SPAR-4-SLR is based on three main stages: assembling, organizing, and evaluating, which are further explained in detail through six specific sub-processes: identification, acquisition, organization, purification, evaluation, and report.

3.1 The Assembly

The assignment stage of the protocol involves the first-time assembly of the basic elements of the revision. This process comprises two separate phases: the first one is identification, and the second one is the acquisition.

Identification: As a first step, one needs to define clearly the research area, main questions of the study, and the selection criteria of the sources (type of documents, quality of the journals, etc.). In our case, we focused on the literature related to ERP systems and their impact on organizational performance.

The two research questions (QR1 and QR2), which form the basis for this review, are presented in Figure 1. They focus on examining the bibliometric achievements of the field and on investigating its intellectual structure.

Acquisition: This sub-step deals with gathering the corpus of articles to be analyzed. The research was conducted using the Scopus database, renowned for its wealth and high quality of scientific content. We targeted publications from 2000 to 2025, using keyword combinations such as “ERP”, “ERP and Performance”, and “Enterprise Resource Planning” applied in the titles, abstracts, or keywords of the articles.

Only peer-reviewed articles published in internationally indexed academic journals, as listed in Scopus or Web of Science, were considered. The quality of sources was checked using impact factors and the number of citations to ensure the reliability and relevance of the analyzed publications.

subsection provides real-life examples of companies adopting channel integration quality in their purchasing platforms. A study conducted by Salesforce in 2020 [6] found that 80% of customers believe their overall experience with a company is as important as its products or services. Companies can deliver a more satisfying and consistent user experience by ensuring a high-quality integration of online channels. For example, the H&M retail chain offers an integrated online and in-store shopping experience, where customers can access the same products and promotions and pick up their purchases in-store.

The online channel integration quality is also critical to ensuring consistent marketing messages. For example, McDonald’s uses an omnichannel approach for its "Big Mac" ad campaign. It uses the same visuals and messaging across TV ads, social media, and mobile apps to deliver a consistent
brand experience.

Companies can reduce the costs associated with managing multiple channels by providing consistent and satisfying user experience across online channels. For example, Delta Airlines implemented an omnichannel strategy to reduce customer support costs by providing real-time flight information across channels (phone, website, mobile app, etc.).

The online channel integration quality can also help companies optimize their marketing effectiveness. For example, the cosmetics brand Sephora uses an omnichannel approach to track the end-to-end customer

journey, using data and analytics to personalize offers and promotions based on individual customer preferences.

Therefore, studying the online channel integration quality in 2023 is very crucial to ensure satisfying, consistent, and personalized user experience, as well as to improve the effectiveness and profitability of omnichannel marketing strategies.

3.2 The organization and purification of the corpus

After the collection stage, the next phase was to organize and filter the corpus with strict criteria.

Only articles published in peer-reviewed scientific journals have been kept. The types of documents selected are research articles and literature reviews. The language filter was limited to English. Three scientific domains were targeted within social sciences: Business & Management, Social Sciences, and Economics, Econometrics & Finance.

After this first sorting, the corpus was exported in bibliographic format (BibTeX) for processing. At this stage, a total of 1254 articles were chosen. A purification operation was then carried out to remove:

- Duplications,
- Unwanted articles,
- Publications solely focused on the technical aspects of ERP without any

After this cleaning, the final corpus for the study contained 804 articles.

3.3 Evaluation and Data Analysis

The last phase of the SPAR-4-SLR protocol is to evaluate and document the selected corpus. For this purpose, we have conducted an in-depth bibliometric analysis, combined with a thematic analysis.

Bibliometric analysis focused on publication trends, the most influential authors, the most active journals, as well as the geographical distribution of scientific contributions. It helped to assess the performance of literature through various indicators: the volume of publications, the number of citations, the international collaborations, etc.

At the same time, a cluster analysis based on keyword co-occurrence and bibliographic coupling was performed using the VOSviewer software. This approach enabled the identification of the principal sub-themes, the localization of the most significant intellectual currents, and a deeper understanding of the ERP research structure.

Moreover, a thematic analysis was also conducted to predict future trends in the area. The findings of all the studies are given as plots, tables, and text comments.

No external funding sources were used to conduct this work, which is based solely on secondary data accessible through academic databases.

The results are structured in two parts, related to the two research questions:

- A bibliometric analysis, which delves into the publication dynamics of ERP.
- One content analysis, which summarizes the theoretical and empirical approaches related to ERP and organizational performance.

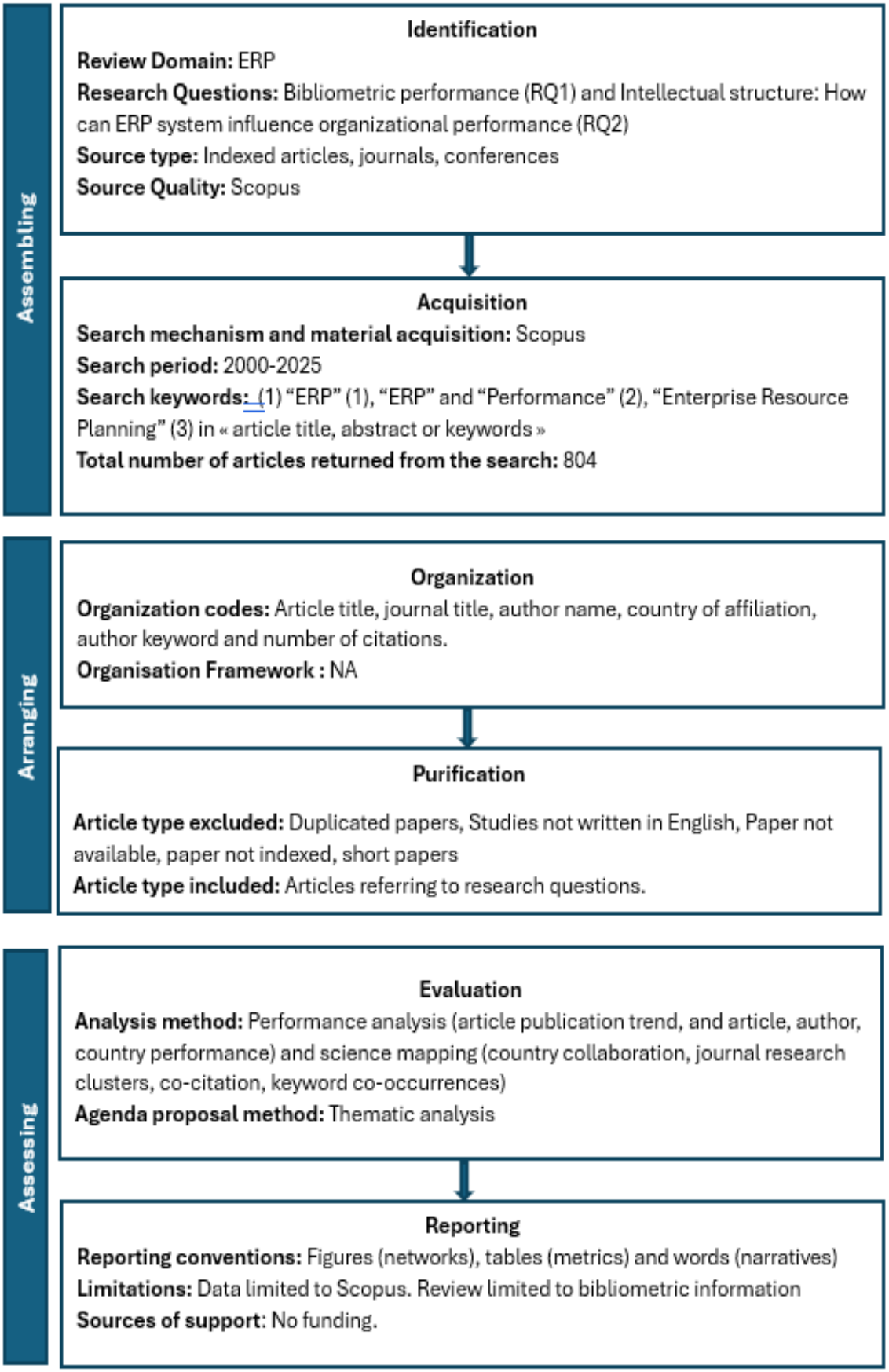

Figure 1: The SPAR-4-SLR protocol applied to ERP

4. Analysis of the Results of the Systematic Literature Review

4.1 Bibliometric Analysis

The critical point of this review is the bibliometric study, which aims to offer a clear and well-structured overview of the academic research development on ERP systems. This kind of study reveals the major scientific trends, the principal contributors, as well as the intellectual currents around the topic linking the ERP with organizational performance.

By using the VOSviewer software, we have been able to map the dynamics of the domain by identifying the collaboration networks between authors, the most influential journals, the most frequent keywords, and the most cited articles. This approach enables us to see the cluster themes appearing in the literature on ERP and to identify the emerging trends.

The study here is based on several classic bibliometric techniques, for example:

- The analysis of co-citation (to identify connections between authors or concepts),
- The study of keyword co-occurrence (to highlight main research areas),
- The performance analysis of publications (number of citations, impact, and frequency).

4.1.1 Performance of the corpus

Our corpus comprises 804 documents published between 2000 and 2025, providing a broad temporal perspective on the evolution of research surrounding ERP. As shown in Figure 2, there is a steady increase in the number of publications from 2000, reflecting the growing interest of the scientific community in the strategic issues related to the implementation and the impact of ERP.

The rapid development of digital technologies essentially drives this increase, the rise of the digital transformation of companies, and the integration of ERP in increasingly diversified contexts (industry, health, education, public sector...).

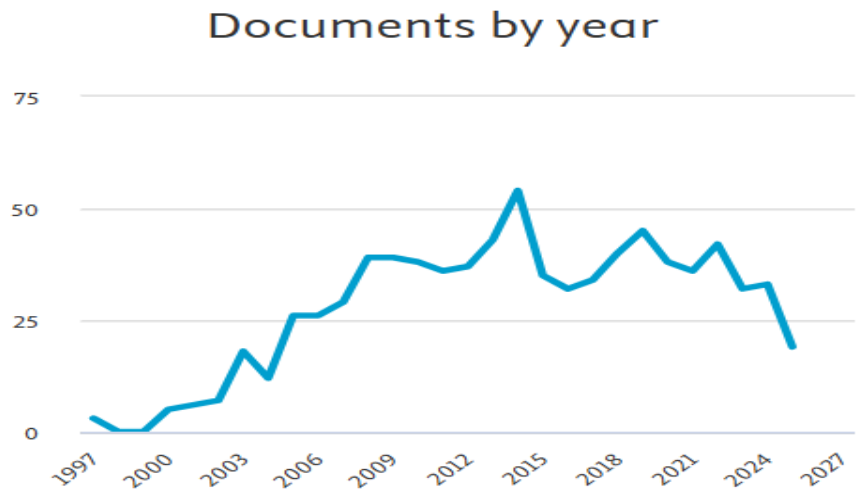

Figure 2: The Evolution of ERP Articles from 2000 to 2025

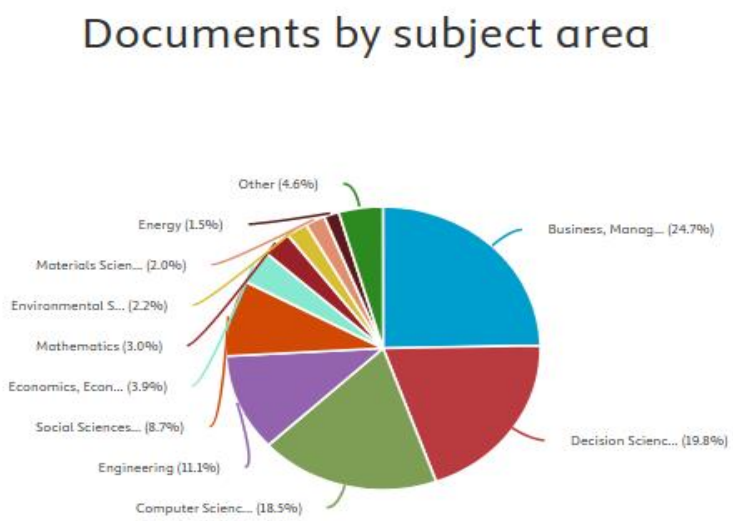

Figure 3: ERP papers by Field (before narrowing the search to the three management specialties)

Peaks in publication were observed in 2009 and 2018, representing the periods that were most intensive in research, with these periods often correlated to significant technological changes (such as cloud computing, mobile ERP, and open-source ERP) and the digitization of business processes.
On top of that, the COVID-19 pandemic acted as a booster, accelerating the digitization of organizations and strengthening the need for seamless and reliable tools. This situation has led to a surge in ERP studies in the 2020–2022 period, highlighting their importance in business continuity.
The theme analysis, along with the topics associated, indicates that ERP researchers do not confine themselves only to technical or functional aspects. Besides, they consider issues such as:

- The use of ERP as a source of organizational value creation,
- The contribution of ERP to the company's agility,
- The implementation of the project's most critical success factors,
- The changes in financial performance, decision making, or knowledge management as a result of ERP implementation.

These different orientations are grouped in clusters that we are going to analyze next, to have a closer look at the intellectual structure of the field.

4.1.2 Performance of authors in ERP research

The bibliometric analysis of our corpus helped to discover the most prolific authors in the ERP systems field. The above chart (Figure 4) lists the ten researchers who have published the most documents on this topic in the Scopus database between 2000 and 2025. Tsai, W.H. occupy the first position in the list with a total of 12 publications. That demonstrates a research commitment to ERP, particularly in the areas of Performance, cost evaluation, and organizational integration.
In his footsteps is Koh, S.C.L., whose work on the Continuous supply chain integration and ERP adoption in industrial milieus have been widely acknowledged.

In addition, researchers such as Krcmar, H., Aremu, A.Y., Bahroun, Z., or Shahzad, A. are also identified as major contributors, each of them having at least five publications in the related field. Some authors are also

prominent in clusters related to information systems governance, digital transformation, and change management following the implementation of ERP.

Compared with those fields that are dominated by a handful of star authors, in the ERP research area, one could find a diversity of profiles and geographical locations, thus a multidisciplinary and globalized research field. This scattering implies that the ERP study is attracting researchers from not just one but several disciplines: business, engineering, information systems, economics, etc.

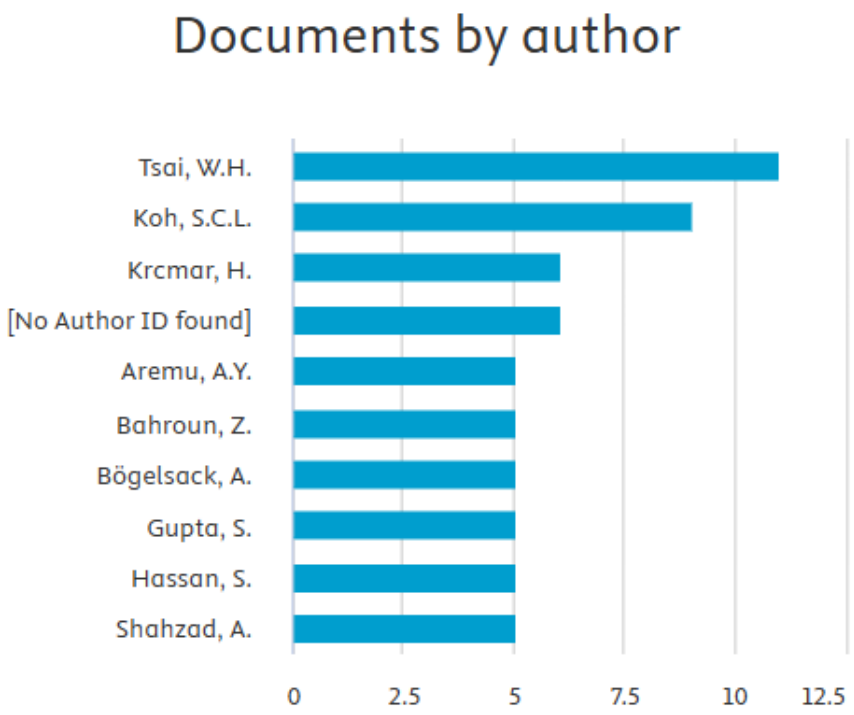

Figure 4: ERP Documents by Authors

Figure 5, created by the VOSviewer software, shows a network graph that allows us to see the most active authors in the field of ERP systems research, based on the number of papers published. It shows the most productive academic work in this area and the most influential authors at a glance.

In this graph, each node is an author. The volume of the node corresponds to the number of papers that the author has done in the dataset. The bigger the node is, the more the author has contributed to the ERP literature. The authors who have been highly productive in research are thus visually highlighted, which makes referencing the most prolific figures straightforward.

Among the major contributors identified, Tsai, W.H., stands out as the most productive author with 12 publications, followed by Koh, S.C.L., with 11 papers. These two researchers are characterized by their strong presence in co-occurrence networks of research dealing with organizational performance, ERP evaluation, and strategic integration. Moreover, scholars like Krcmar, H., Aremu, A.Y., Bahroun, Z., and Shahzad, A., are not only among the authors, but they are also significant points in the figure, with multiple publications (between 5 and 6) each. Their work helps broaden the research topic, encompassing aspects such as change management, logistics, ERP adoption in SMEs, and digital transformation, among others.

The colors used in the graph allow for visualization of the clusters of authors having the same themes or collaborations. Such a feature highlights the presence of sub-communities in the field of research on Enterprise Resource Planning (ERP), which are often based on specific issues (supply chain, performance, integration, innovation...).

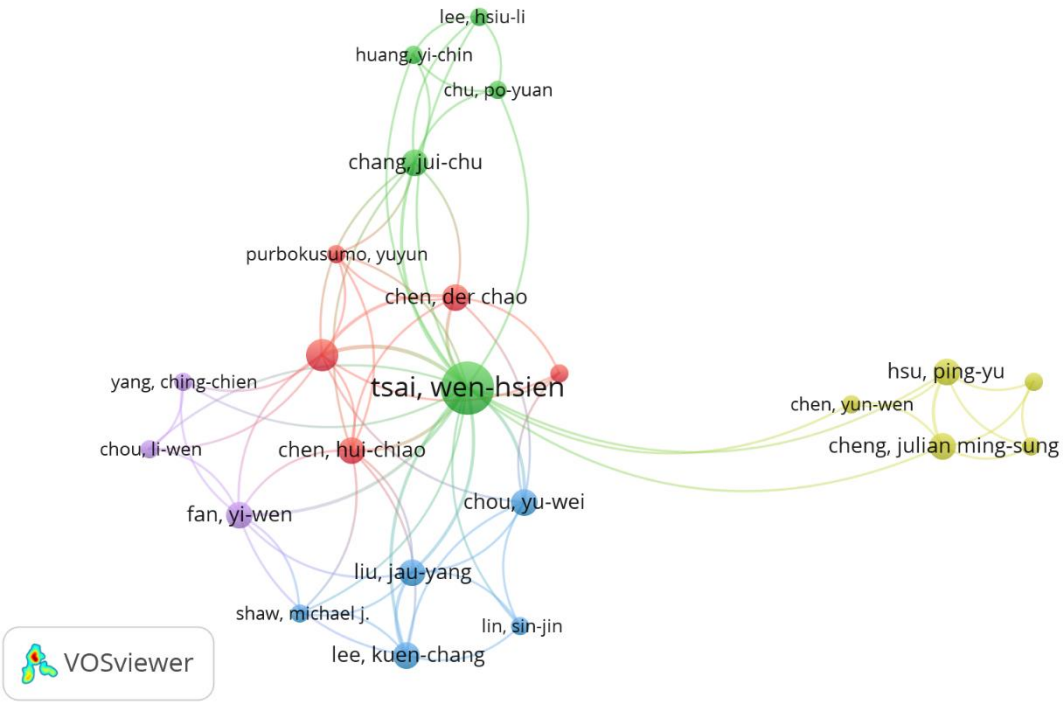

Figure 5: Author Performance in ERP Research

4.1.3 Article Performance

To determine which publications have had the most significant influence in the field of ERP systems, a co-citation analysis was conducted using a corpus extracted from the Scopus and Web of Science databases, spanning the period from 2000 to 2025. This method allows for the identification of the most influential papers in the specific field of ERP based on how many times a paper is cited by other documents from the same field (local citations), as opposed to global citations, which may refer to different themes.

Table 1 below depicts the top 11 most-cited ERP articles in scientific literature. The papers represent the primary and founding references in the study of ERP, notably on the aspects of implementation, organizational performance, critical success factors, and digital transformation, among others.

Table 1: The 10 Most-Cited ERP Articles from 2000 to 2025

Rang	Auteurs	Citation	References
1	Fui-Hoon Nah, F., Lee-Shang Lau, J., Kuang, J.	974	[2]
2	Moeuf, A., Pellerin, R., Lamouri, S., Tamayo-Giraldo, S., Barbaray, R.	891	[3]
3	Al-Mashari, M., Al-Mudimigh, A., Zairi, M.	689	[4]
4	Hitt, L.M., Wu, D.J., Zhou, X.	612	[5]
5	Hendricks, K.B., Singhal, V.R., Stratman, J.K.	606	[6]
6	Gattiker, T.F., Goodhue, D.L.	510	[7]
7	Bradford, M., Florin, J	502	[8]

8	Wei, C.-C., Chien, C.-F., Wang, M.-J.J.	500	[9]
9	Barki, H., Pinsonneault, A.	375	[10]
10	Poston, R., Grabski, S.	332	[11]
11	Appelbaum, D., Kogan, A., Vasarhelyi, M., Yan, Z.	327	[12]

These results highlight the historical significance and academic influence of certain pioneering publications, such as Nah et al. (2001), which remains the most cited work in the corpus with 974 citations, particularly for its comprehensive model of ERP critical success factors.

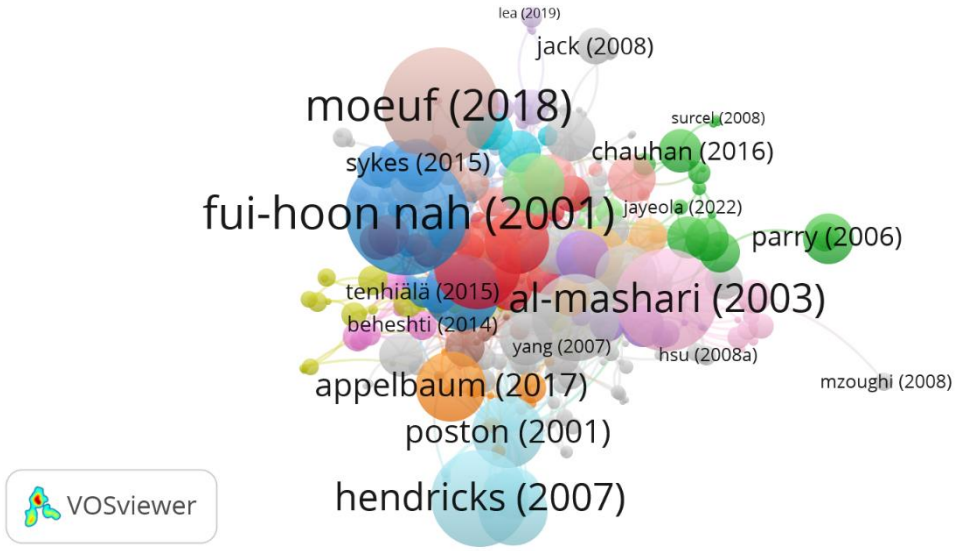

Figure 6: Articles' performance

The contributions of Moeuf et al. (2018) [3] and Al-Mashari et al. (2003) [4] continue to serve as a base for numerous recent works, not only related to industrial digitalization but also to ERP implementation strategies. The co-citation analysis also reveals that many of these publications are at the intersection of various disciplines, such as strategic management, information systems, or integrated logistics, thus indicating the transversality of the ERP topic in management research.This mapping of the most cited works thus provides a solid basis for any in-depth study or future research on the impacts of ERP on organizational performance.

The four most cited works about ERP from the management literature are the following:

The article by Fiona Fui-Hoon Nah, Janet Lee-Shang Lau, and Jinghua Kuang [2], published in the Business Process Management Journal, is a significant contribution to the research on the implementation of ERP systems. Through an exhaustive review of the existing literature, the authors identify, structure, and analyse the Critical Success Factors (CSFs) for ERP implantation, thus clarifying the reasons for success or failure of these often complex and expensive projects.

The originality of their research is based on three main contributions. First, the authors synthesized rigorously ten previous studies dealing with the success factors of ERP as the central theme and, each time grouping the sub-factors with a similar nature to synthesize a coherent list of eleven critical factors. These

factors range from project team composition and top management support to change management, Business Process Reengineering (BPR), and the monitoring and evaluation of performance.

The authors then categorized these factors into different phases of the ERP life cycle model by Markus and Tanis (2000), namely: chartering (decision and initial planning), project (implementation), shakedown (stabilization), and onward and upward (continuous improvement). This processual and structured approach not only facilitates the understanding of the timing of each factor's role but also assists in customizing the project management strategy accordingly. For instance, change management and user training are highlighted as necessary aspects for all project phases, whereas monitoring is pivotal from the stabilization phase onwards. Finally, their input is focused on a holistic and pragmatic perspective, deeply rooted in academic literature and practice-oriented at the same time. They emphasize the need for efficient collaboration among the various parties (internal and external), a determined commitment from top management, and a clearly defined strategic alignment. The authors also emphasize the importance of strong leadership (project champion), the restriction of software customizations, and transparency in communication during the project.

In the article entitled "The industrial management of SMEs in the era of Industry 4.0" (Moeuf et al., 2018) [3], the first author, with the help of his co-authors, critically examines the adoption of digital innovations in small and medium enterprises (SMEs). This area has been the focus of 23 empirical case studies, as identified through a systematic review of the literature. The research concerns the role of Industry 4.0 technologies in the planning and control functions within the production domain, as well as the general question of whether small and medium-sized enterprises are technologically fast or slow.

The study indicates that SMEs are still underprepared to fully leverage the opportunities offered by Industry 4.0, although these are more accessible and flexible than traditional systems such as ERP. The most widely used technologies are cloud computing and the Internet of Things, which primarily enable better process monitoring. On the other hand, more advanced technologies, such as big data, cybersecurity, and autonomous systems, are still underutilized.

The findings reveal that the initiatives implemented by small and medium-sized enterprises are mainly aimed at improving flexibility, productivity, and reducing lead times. However, very few companies achieve a genuine level of optimization or autonomy in their management, and no significant transformation of economic models has been observed yet. Applications are mainly limited to monitoring, with no substantial change in production planning.

Eventually, Moeuf et al. emphasize that, despite an evident potential, the adoption of Industry 4.0 in SMEs is still partial and often geared towards short-term solutions only. The authors call for increased efforts to support these companies in a more structured and sustainable digital transformation.

In their paper entitled "Enterprise Resource Planning: A Taxonomy of Critical Factors", Majed Al-Mashari, Abdullah Al-Mudimigh, and Mohamed Zairi (2003)

(Al-Mashari et al., 2003) [4] Propose an innovative taxonomy for critical success factors (CSFs) in the implementation of Enterprise Resource Planning (ERP) systems. The study's goal is to gain a better understanding of how these systems can indeed improve organizational performance by closely aligning the technical and organizational imperatives through a process management logic.

The writers state that ERP, although it may have facilitated changes that bring notable good integrations, traceability, and efficiency, has also been associated with very high costs, significant organizational changes, and, sometimes, failure. Ill-fitting between company objectives and the means of implementation of the ERP, can in horrible ways become the cause of making the promised benefits not to be realized.

The authors' taxonomy is grounded in a thorough literature review and concrete feedback. It highlights the six critical dimensions: strategy, business processes, technology, organizational structure, corporate culture, and management systems. Thus, the success of an ERP project is the performance of a company that deals

with change, aligns the business processes with the system, and neither human nor technical resources are exhausted but instead invigorated by a vision shared by and dependent on effective leadership.

The management's role is emphasized throughout: top management's commitment, communication, and change management are among the tools that determine the success of the implementation. The stages of deployment, performance evaluation, and organizational learning must also be conceived beforehand.

To sum up, this article emphasizes the fact that the success of an ERP project is not only dependent on technological choice, but also on a global and consistent approach. Establishing a strong link between the implementation method and performance measures of the processes is key to creating real value in the long run.

In their article "Investment in Enterprise Resource Planning: Business Impact and Productivity Measures", Lorin M. Hitt, D.J. Wu and Xiaoge Zhou (2002) [5] investigate the economic and organizational impact of ERP systems, basing their conclusions on a large-scale empirical study. Compared to numerous qualitative case studies and sectoral testimonials often cited in the literature, the main difference in this article lies in the extent of quantitative, multi-company, and multi-year data used to assess the real effects of ERP investments on firm performance.

The authors argue that the first result of an ERP implementation is a slowdown in productivity and economic performance. Nevertheless, at the end of the day, companies that decide to go this way are those that see the most significant financial benefits in the long run, including an enhanced market (stock) performance (measured by the Tobin's Q ratio). It follows that the gains from ERP, although delayed, ultimately become greater than the investment costs and associated implementation risks.

The article also sheds light on the magnitude of the challenges related to ERP projects: their average cost almost reaches 15 million dollars, their implementation duration is often more than 20 months, and their success depends a lot on the company's ability to manage organizational complexity, coordination between internal teams and external consultants, as well as the adaptation of business processes to the standard functionalities of the software.

Moreover, the writers stress the potential of ERP as a differentiator. Besides the mere automation of processes, these systems allow an easy and integral flow of information, thus enabling a faster and decentralized decision-making process. In that sense, ERP is a strategic lever to enhance competitiveness, provided that the company manages to get over the difficulties related to its deployment.

4.1.4 Country Performance

Figures 7 and 8 illustrate the performance of countries in terms of the number of publications, citations, and total link strength, providing insights into the global landscape of ERP research.

An examination of scholarly output on Enterprise Resource Planning (ERP) systems, using both VOSviewer visualizations and quantitative metrics, reveals pronounced differences across countries regarding the number of publications, citation impact, and levels of international research collaboration.

Leading countries: high output and dense networks: The United States clearly stands out as the global leader in ERP research, producing 153 publications, receiving 10,571 citations, and holding a total link strength of 496. This central position within the international scientific network is further reinforced by extensive collaborations with other countries, reflecting the production of high-quality, widely recognized research.

Other nations, including China, India, Taiwan, the United Kingdom, Canada, Malaysia, and Saudi Arabia, also demonstrate significant scientific activity. They combine substantial publication volumes with strong integration in co-authorship networks, highlighting their active participation in global ERP research.

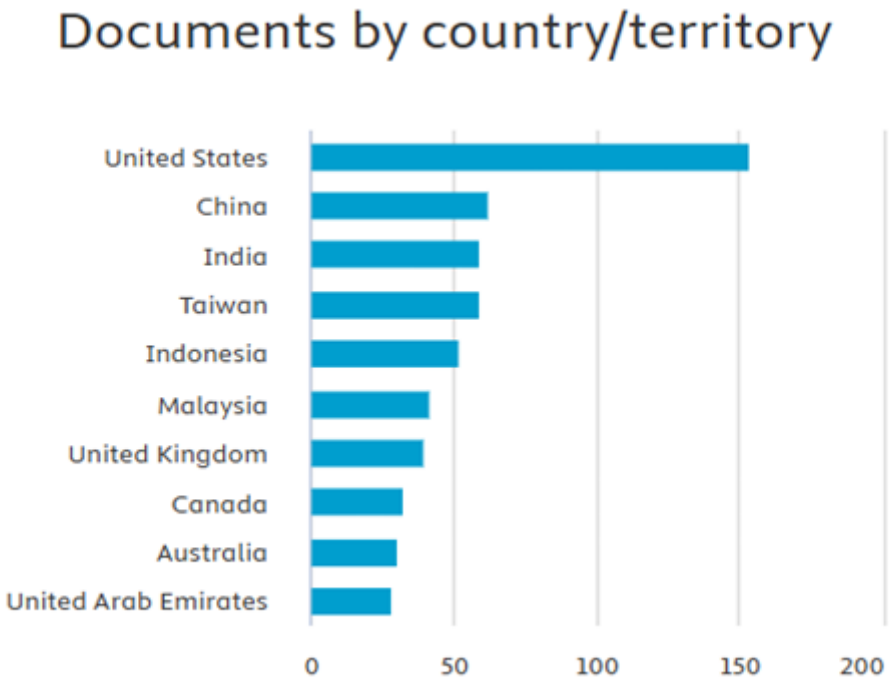

Figure 7: Number of Documents by Country

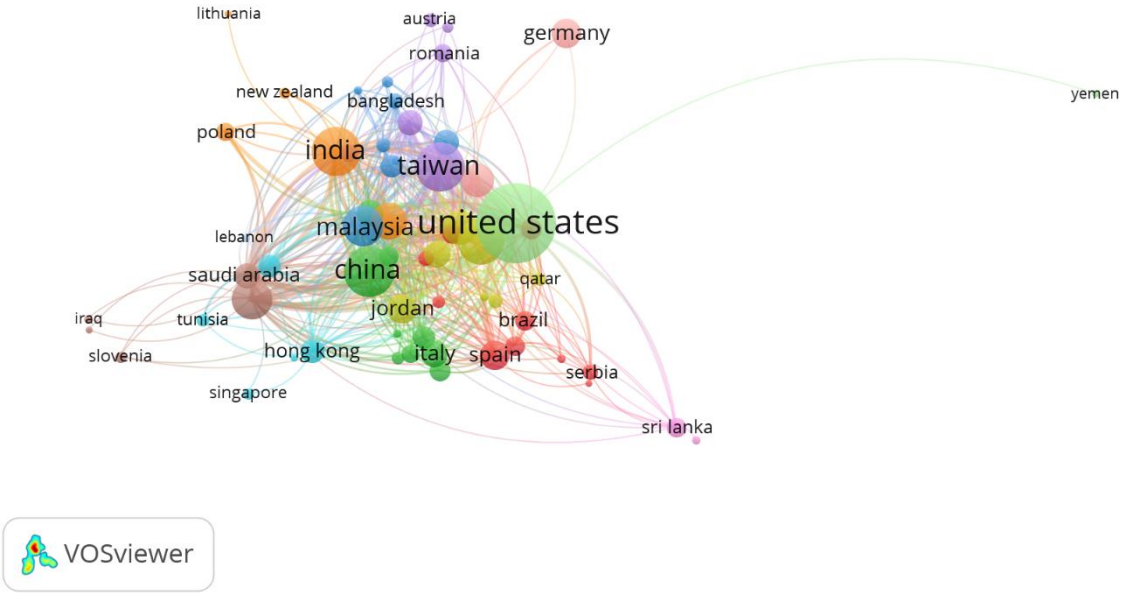

Figure 8: Country-level Research Performance

Scientific impact versus quantity: Certain countries, such as Canada and France, achieve high scientific impact despite producing a moderate number of publications. For instance, Canada, with 32 publications, accumulates 2,764 citations, indicating that its research is often published in influential journals and widely cited. Similarly, France has 18 publications with 1,494 citations. In contrast, countries like Indonesia and Brazil, while contributing a relatively higher number of publications (51 and 10 respectively), exhibit lower scientific impact, suggesting limited international visibility or lower recognition of research quality.

Collaborations and regional clusters: Visualization reveals well-defined regional clusters:

- A strong Asian cluster including India, China, Taiwan, Malaysia, and Hong Kong, reflecting a dynamic regional research network.
- A Euro-American cluster encompassing the United Kingdom, United States, Canada, Italy, and Spain, emphasizing Western-oriented research collaboration.
- An emerging Middle Eastern cluster dominated by Saudi Arabia, Jordan, and the United Arab Emirates.

These clusters not only reflect geographic proximity but also linguistic, cultural, and institutional affinities that influence research collaborations.

Marginal and underrepresented countries: Several countries appear peripheral or isolated in the network, showing low publication counts, minimal citations, and negligible link strength. Examples include Algeria, Yemen, Ghana, and Lithuania. Their limited integration into the international network may be attributed to insufficient research infrastructure, lack of funding, or underdeveloped scientific policies.

Implications and future directions: This analysis underscores disparities in ERP research production and dissemination. While some countries have established themselves as influential research hubs, others struggle to participate in international knowledge networks. For developing countries, enhancing international collaboration, supporting researchers, and promoting publication in high-impact journals are strategic measures to improve scientific visibility.

4.2 Content Analysis: Thematic Approach to ERP Literature (2000–2025)

The thematic analysis complements the bibliometric approach by identifying key concepts, thematic clusters, and intellectual structures within ERP research. Using VOSviewer, keyword co-occurrences are visualized, where each node represents a keyword, its size indicates frequency, and its color reflects cluster membership, allowing a clear mapping of thematic patterns and research dynamics.

The analysis of Figure 9 reveals a dense network of keywords, organized into six principal clusters, each representing a distinct thematic area within ERP research. The clusters can be described as follows:

Cluster 1: Industrial Management and Operational Planning

Represented in red, this cluster encompasses studies focusing on ERP integration in industrial processes. Keywords such as industrial management, scheduling, production planning, and computer simulation highlight a strong operational orientation, including production management, logistics, and resource optimization. Research within this cluster explores how ERP systems can automate, plan, and control production flows while enhancing efficiency and accuracy, often employing quantitative methods, simulation models, or case studies in manufacturing firms.

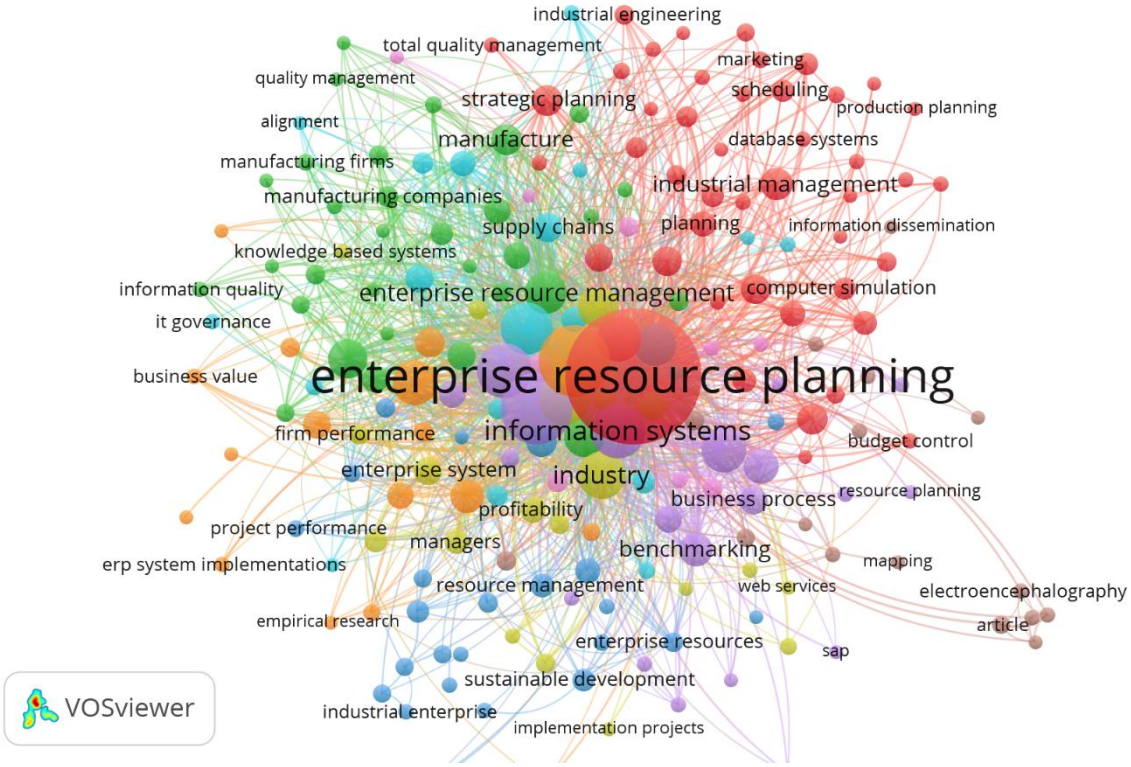

Figure 9: Visualization map of keyword occurrences within the studied corpus (804 articles)

Cluster 2: Organizational Performance, Governance, and Information Quality

This green cluster emphasizes strategic and qualitative dimensions of ERP use. Terms like firm performance, information quality, IT governance, alignment, and business value indicate a focus on the organizational outcomes and value generated by ERP systems. Research here mainly investigates performance measurement post-ERP implementation, strategic alignment between IT and business goals, and data quality management, reflecting an approach oriented toward governance, strategy, and organizational oversight.

Cluster 3: ERP Implementation and Sustainability

The blue cluster includes studies on ERP implementation projects, operational challenges, and sustainability issues. Keywords such as ERP system implementations, project performance, sustainable development, and empirical research highlight interest in critical success factors, adoption challenges, and project outcomes. This cluster increasingly integrates environmental and societal concerns, particularly regarding sustainable industrial practices.

Cluster 4: Information Systems and Business Processes

Appearing in purple, this cluster bridges IT technologies and organizational practices. Keywords like information systems, business processes, benchmarking, SAP, and resource planning illustrate interest in digital transformation through ERP adoption. Studies focus on integrating business processes, standardizing practices, organizational reengineering, and the use of ERP solutions such as SAP, situated at the intersection of information systems research, process management, and performance management.

Cluster 5: Strategy, Management, and Organizational Value

Represented in orange, this cluster addresses managerial and strategic ERP issues. Concepts such as strategic planning, managers, enterprise system, profitability, and project performance explore how ERP systems support strategic planning, influence managerial decision-making, and impact organizational profitability.

Research examines executive acceptance, change management leadership, and large-scale ERP project governance, combining insights from strategic management, corporate finance, and organizational change.

Cluster 6: Emerging and Interdisciplinary Areas

The brown cluster, more diffuse, includes keywords such as mapping, electroencephalography, and articles, indicating emerging or interdisciplinary research directions. These studies may investigate innovative methods to assess ERP's cognitive impact (e.g., using EEG techniques) or focus on systematic reviews and meta-analyses. This cluster reflects ERP research expanding into unconventional approaches, integrating neuroscience, cognitive psychology, and artificial intelligence, while exploring novel application contexts.

This thematic mapping underscores the diversity and evolution of ERP research, highlighting both well-established domains and innovative, interdisciplinary directions.

5. Conclusion

The thematic analysis, based on keyword co-occurrences extracted from ERP-related scientific literature between 2000 and 2025, highlights the breadth and diversity of research directions within this field. Six major clusters emerge, representing distinct areas such as industrial management, organizational performance, ERP implementation, business process digital transformation, managerial strategy, and interdisciplinary emerging domains.

Among these, the cluster focusing on organizational performance, IT governance, and value creation (Cluster 2, shown in green) stands out due to its strategic significance and managerial relevance. It emphasizes critical topics such as firm performance, information quality, and the value delivered by ERP systems, providing a comprehensive framework for assessing the real impact of integrated enterprise solutions.

The findings of this analysis offer several significant theoretical contributions. Academically, they highlight the complexity and multidimensional impact of ERP systems on organizational performance. The thematic mapping and identified clusters show that current literature extends beyond the technical implementation of ERPs, encompassing strategic, governance, and value-creation dimensions. This broadens existing conceptual frameworks by systematically linking ERP systems to organizational outcomes and emphasizing the importance of contextual factors, such as strategic alignment and information quality, in achieving performance.

From a managerial perspective, these results provide practical insights for organizations. ERP systems are not merely technological tools; their effective implementation relies on the strategic integration of processes, information systems governance, and the management of human and organizational factors. Managers can leverage these insights to optimize ERP deployment, improve data quality, strengthen interdepartmental coordination, and maximize value creation. Understanding thematic clusters can also guide decision-makers in setting priorities and allocating resources effectively during ERP projects.

Regarding future research, several avenues emerge. First, there is a need for more comparative empirical studies across sectors and geographical contexts to better understand the conditions that facilitate or limit ERP effectiveness. Second, research could explore emerging dimensions, such as the integration of ERP with artificial intelligence, advanced analytics, or sustainable practices, to evaluate their impact on organizational performance. Finally, interdisciplinary approaches combining management, information systems, and cognitive sciences could enrich our understanding of ERP influence on decision-making processes and user engagement.

Overall, this study provides a theoretical and practical framework to guide both researchers and practitioners in optimizing ERP systems, while opening pathways for future investigations into their strategic, technological, and organizational impacts.

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